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Conference Abstract

European Taxonomists in Profile: A Data-Driven Approach

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Abstract

This presentation focuses on the service aspect of taxonomy in Europe, encompassing the description, identification, and nomenclature of taxa. This aspect of taxonomy supports all biological research, and working taxonomists contribute to it in different degrees (Dayrat 2005). Taxonomy also serves as a research discipline, emphasising the evolutionary aspects of biodiversity, but this study specifically investigates only the supply of taxonomists as a service and compares this with the demand for taxonomy, which arises from policy that requires information on European biodiversity for development or implementation.

To profile taxonomists, we adopt an automated approach using OpenAlex, an open bibliography of scholarly publications, to extract comprehensive data on authors, their affiliated institutions, and their respective taxa of expertise. This automated approach avoids the well-known biases of self-reported questionnaires, thus ensuring robust coverage across all taxa, and minimising potential geographic, gender and demographic biases.

In addition to analysing the current availability of taxonomic expertise (supply side), this study explores the gaps in taxonomic expertise by examining significant taxa from research and policy perspectives (demand side). Leveraging datasets such as the list of invasive

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species on the horizon for Europe (Roy et al. 2018), the Crop Wild Relative Data section of the U.S. National Plant Germplasm System (USDA 2023) and the International Union for Conservation of Nature's Red List of Threatened Species (IUCN 2022), we assess the demand for taxonomic expertise.

A flow diagram (Fig. 1) illustrates our step-by-step methodology. Beginning with data extraction from OpenAlex, we categorised and analysed more than 650 taxonomic journals published over the past ten years. We filtered these for relevant papers only from European institutions. This resulted in a subset of 31 thousand publications from which we identified 44 thousand authors, and were able to map their taxonomic expertise and their geographic spread. This comprehensive workflow provides detailed demographic data directly derived from bibliographic information, extending on the Red List of Insect Taxonomists (Hochkirch et al. 2022) and enabling repeatable analyses to monitor trends and changes over time. For example, we can track the usage of ORCID identifers by European taxonomists, which we calculate is currently at 64%.

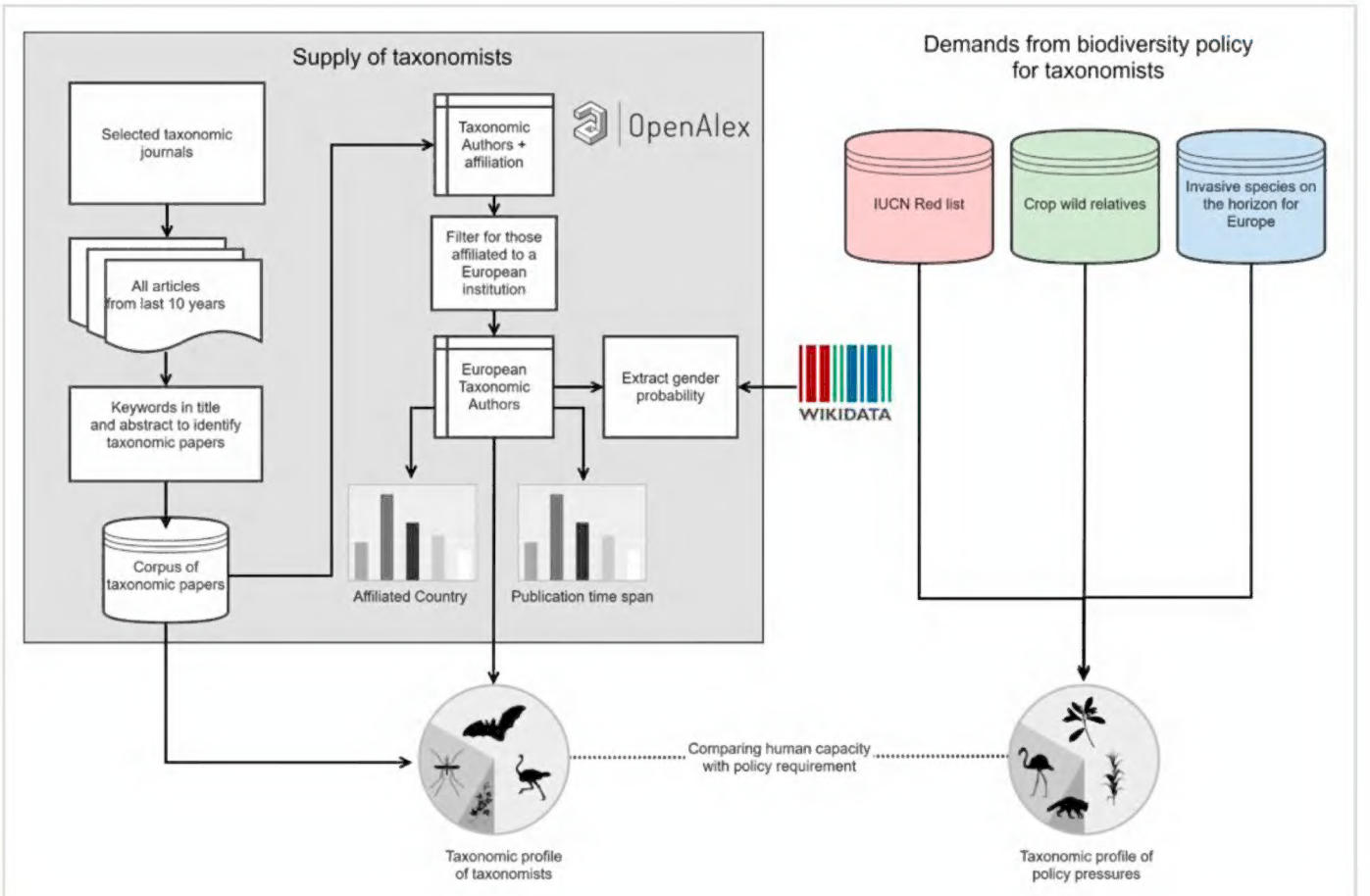
Supply of taxonomists
Selected taxonomic journals
All articles from last 10 years
Keywords in title and abstract to identify taxonomic papers
Corpus of taxonomic papers
Taxonomic Authors + affiliation
OpenAlex
Filter for those affiliated to a European institution
European Taxonomic Authors
Extract gender probability
WIKIDATA
Affiliated Country
Publication time span
Demands from biodiversity policy for taxonomists
IUCN Red list
Crop wild relatives
Invasive species on the horizon for Europe
Comparing human capacity with policy requirement
Taxonomic profile of taxonomists
Taxonomic profile of policy pressures

Figure 1.

Schematic of how we analysed the current supply of taxonomic information from European taxonomists and compared it to some of the demand side drivers.

By considering the demand side rather than assuming equal policy importance across all taxa, our study offers nuanced insights into the contribution of taxonomists in addressing conservation and policy needs in Europe. Furthermore, by highlighting impacts, challenges, and potential solutions, we underscore the significance of taxonomy as a vital service. The recommendations aim to prioritise taxonomy, enhance its contributions to

biodiversity conservation efforts, and provide guidance to policymakers, researchers, and stakeholders invested in sustaining Europe's rich biodiversity.

Keywords

taxonomic expertise, European biodiversity, workflow, invasive species, threatened species, crop wild relatives, OpenAlex, taxonomic literature

Presenting author

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Conflicts of interest

The authors have declared that no competing interests exist.

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